# Role of Context in Establishing Evidence

In a review of evaluation activities conducted on large scale, NSF-funded systemic initiatives, Anderson (2002) reported that (a) the context in which a project was carried out affected interpretation of results, and (b) strategies that were demonstrated to be effective in one context were ineffective in others. Wiess, et al. (2004) distinguishes between "inside" and "outside" forces that effect educational systems. Outside forces include legislation and policies often driven by small but powerful and well-organized groups, and political stances driven by global competitiveness, economic change (e.g., recessions), or disasters that become national or international concerns because of the impact on human lives. Inside forces such as parental concerns, the lack of sufficient numbers of qualified teachers, and children living in poverty also affect educational settings and opportunities for learning. Both inside and outside factors may have large impacts on student outcomes, particularly given the difficulty in controlling and isolating those factors in the typical educational settings in which projects are implemented.

For MSP projects, evidence for contextual factors that have an impact, directly or indirectly, on student outcomes should be gathered and included when analyzing data and interpreting results. Contextual factors include historical, cultural, political, and organizational factors that affect student learning and the environment in which students learn. Some important contextual indicators include student demographics, teacher workload, financial resources, and teacher qualifications (Lashway, 2001), as well as state educational budget changes, testing policies, graduation requirements, and high-impact school or community events (e.g., school closings, threats to safety). The *Program Evaluation Standards* state, "The context in which the program exists should be examined in enough detail, so that its likely influences on the program can be identified" (Joint Committee, 1994). Examining contextual factors can help explain non-significant or negative findings, unanticipated outcomes, or other unexpected results. Contextual factors can also help guide decisions and provide documentation for mid-course corrections.

Determining which contextual factors to measure can be a daunting task. However, a number of resources are available to help define relevant factors. Some resources are described here.

*Key Evaluation Checklist (Scriven, 2004)*        http://www.wmich.edu/evalctr/checklists/kec.htm

In his Key Evaluation Checklist, Scriven (2004) recommends gathering the following evidence about the background and context of a project:

- Historical, recent, simultaneous, and any projected settings for the program.
- Upstream stakeholders, e.g., NSF, and their stakes.
- Recent relevant legislation and any policy or attitude changes since start-up.
- The underlying rationale, a.k.a. official program theory, and political logic.
- General results of a literature review on similar interventions, including "fugitive" studies not published in standard media and those that can be located on the Internet including the "invisible web" (e.g., by using Copernic Personal Agent).
- Previous evaluations, if any, and their impact.
- Support infrastructure for the project and its activities.

*TIMSS Contextual Framework (IEA, 2005)*        http://timss.bc.edu/timss2003i/context.html
*(Schmidt & Cogan, 1996)*        http://timss.bc.edu/timss1995i/TIMSSPDF/TRCHP5.PDF

The Trends in International Mathematics and Science Study (TIMSS) is designed to help countries all over the world improve student learning in mathematics and science. Educational achievement in approximately 50 countries throughout the world is assessed in the fourth and eighth grades to provide information about trends in performance over time, coupled with extensive background information to address concerns about the quantity, quality, and content of instruction. The TIMSS contextual framework identifies the major characteristics of the educational and social contexts that are studied in relation to improving student learning. The following list categorizes the contextual indicators developed for the TIMSS.

The Curriculum
- Formulating the Curriculum
- Scope and Content of the Curriculum
- Organization of the Curriculum
- Monitoring and Evaluating the Implemented Curriculum
- Curricular Materials and Support

The Schools
- School Organization
- School Goals
- Roles of the School Principal
- Resources to Support Mathematics and Science Learning
- Parental Involvement
- Disciplined School Environment

Teachers and Their Preparation
- Academic Preparation and Certification
- Teacher Recruitment, Assignment, and Induction
- Teacher Experience
- Teaching Styles
- Professional Development

Classroom Activities and Characteristics
- Curriculum Topics Taught
- Time
- Homework
- Assessment
- Classroom Climate
- Information Technology
- Calculator Use
- Emphasis on Investigation
- Class Size

The Students
- Home Background
- Prior Experience
- Attitudes

*NAEP Education Indicators (NCES, 2005)*       http://nces.ed.gov/programs/coe/list/i4.asp
http://nces.ed.gov/nationsreportcard/mathematics/howdevelop.asp

*(CCSSO, 2005)*       http://www.ccsso.org/naepprofiles/StatebyState/CCD_Master.cfm

The National Assessment of Educational Progress (NAEP), also known as "the Nation's Report Card," is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Since 1969, assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and the arts. In addition to testing cognitive abilities, NAEP collects information that helps put student achievement in context. Various questionnaires provide context for NAEP assessment results:

- Student questionnaires, which examine background characteristics, subject-area experience, and motivation on the assessment;
- Teacher questionnaires, which gather data on the background and training of teachers and classroom-by-classroom information;
- School questionnaires, which ask principals about school size and other characteristics; and
- SD/LEP questionnaires (students with disabilities or limited English proficiency), which ask the person most familiar with the student about accommodations normally permitted.